

09/745,896

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) A method for purification of acrylic acid, which comprises the ~~step~~ steps of:

a) providing a crude acrylic acid having a concentration ratio of furfural to acrolein by weight that is adjusted so as to satisfy the following equation:

$$3 \leq (\text{furfural concentration by weight}) / (\text{acrolein concentration by weight}) \leq 100; \text{ then}$$

b) charging the crude acrylic acid with an aldehyde treatment chemical, with the aldehyde treatment chemical comprising a hydrazine compound; then

c) reacting the hydrazine compound with aldehydes of the crude acrylic acid such that, after said step of reacting and prior to a step of distilling the crude acrylic acid, a concentration of said hydrazine compound in said crude acrylic acid is not more than 100 ppm by weight; and then

d) distilling a the crude acrylic acid containing said furfural and acrolein as impurities ~~which is charged with an aldehyde treatment chemical, wherein the concentration ratio of furfural to acrolein by weight in said crude acrylic acid, prior to the crude acrylic acid being charged with said aldehyde treatment chemical, is adjusted so as to satisfy the following equation:~~

~~$$3 \leq (\text{furfural concentration by weight}) / (\text{acrolein concentration by weight}) \leq 100.$$~~

2. (previously presented) A method according to claim 1, wherein the concentration ratio of furfural to acrolein

09/745,896

by weight in said crude acrylic acid is adjusted so as to satisfy the following equation:

$$3 \leq (\text{furfural concentration by weight}) / (\text{acrolein concentration by weight}) \leq 30.$$

3. (original) A method according to claim 1, wherein the amount of said aldehyde treatment chemical is not more than 8.0 mole per mole of furfural existing in said crude acrylic acid.

4. (original) A method according to claim 2, wherein the amount of said aldehyde treatment chemical is not more than 8.0 mole per mole of furfural existing in said crude acrylic acid.

5. (canceled).

6. (canceled).

7. (canceled).

8. (canceled).

9. (canceled).

10. (canceled).

11. (canceled).

12. (canceled).

09/745,896

13. (currently amended) A method for purification of acrylic acid, comprising the steps of:

a) providing a crude acrylic acid containing furfural and acrolein as impurities;

b) determining a ratio of a concentration of furfural to a concentration of acrolein;

c) determining whether the ratio of the concentration of furfural to the concentration of acrolein is within a preset range and, if so, continuing with said method;

d) determining whether the ratio of the concentration of furfural to the concentration of acrolein is outside said preset range and, if so, adjusting the ratio of the concentration of furfural to the concentration of acrolein to fall within said preset range;

e) charging said crude acrylic acid with a chemical that treats aldehydes and selecting, as said chemical that treats aldehydes, a hydrazine compound, with said step of charging taking place after said steps of determining and after said step of adjusting and prior to a step of distilling said crude acrylic acid; then

f) reacting the hydrazine compound with aldehydes of the crude acrylic acid such that, after said step of reacting and prior to a step of distilling the crude acrylic acid, a concentration of said hydrazine compound in said crude acrylic acid is not more than 100 ppm by weight; and then

~~g) distilling said crude acrylic acid having said chemical that treats aldehydes.~~

14. (previously presented) A method according to claim 13, wherein said preset range is: (furfural concentration by weight)/(acrolein concentration by weight) \leq 100.

09/745,896

15. (previously presented) A method according to claim 13, wherein said preset range is: $2 \leq (\text{furfural concentration by weight})/(\text{acrolein concentration by weight}) \leq 30$.

16. (previously presented) A method according to claim 13, wherein said preset range is: $3 \leq (\text{furfural concentration by weight})/(\text{acrolein concentration by weight}) \leq 100$.

17. (previously presented) A method according to claim 13, wherein said preset range is: $3 \leq (\text{furfural concentration by weight})/(\text{acrolein concentration by weight}) \leq 30$.

18. (previously presented) A method of claim 13, and further comprising the step of selecting an amount of said chemical that treats aldehydes to be not more than 8.0 moles per mole of furfural in said crude acrylic acid.

19. (canceled).

20. (canceled).

21. (canceled).